I. OBJECTION TO THE ABSTRACT

The abstract of the disclosure stands objected to. The abstract has been amended to contain proper language with less than 150 words. Such an amendment is believed to be sufficient to overcome the objection. Withdrawal of the objection is respectfully requested.

II. REFERENCES IN THE SPECFICATION

Applicants acknowledge that no information disclosure statement has been filed for this case. It is noted that the background of the invention section of the present specification which the Examiner is presumed to have read describes the state of the art.

Further, an information disclosure statement is submitted herewith.

III. REJECTIONS OF CLAIMS 3 AND 13 UNDER 35 U.S.C. § 112

Claims 3 and 13 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Claims 3 and 13 have been amended to provide a full spelling of the term "MAC" to address the Examiner's concerns. These amendments do not narrow the claims. Withdrawal of the rejections is respectfully requested.

IV. REJECTIONS OF CLAIMS 1-32 UNDER 35 U.S.C. § 103

Claims 1-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,926,479 ("Baran") in view of U.S. Patent No. 5,832,032 ("Overbury"). Withdrawal of the rejections is respectfully requested for at least the following reasons.

The present invention set forth in claims 1, 15, 21, 27, 31, and 32 relates to methods and apparatus for detecting a faulty cable modem. Claim 15 has been amended to further clarify the distinction between the invention and the cited references. One of the features of the invention is that a cable modem is determined to be faulty based on (i) a first FFT measurement at a time when the cable modem is transmitting data upstream, and (ii) a second FFT measurement at a time when no data is being transmitted upstream. For example, claim 1 recites that noise created by the cable modem is detected by comparing FFT measurements at (i) a "first time slot" in which the cable modem can transmit data upstream, and (ii) a "second time slot" unassigned to a particular cable modem. See, page 23, lines 3-14; and page 24, lines 1-9 of the present specification.

Baran relates to a communication network which uses a TV cable system as a transmission medium. In Baran, the subscriber interface unit (SIU) 14 shown in Fig. 3a includes the TV cable modem 108, the telephone interface unit 62, the software defined transceiver 601,

and the microcontroller 72. The SIU 14 having these four subcomponents interfaces the cordless telephone units 8 and 8' and other devices with the cable 16. In the SIU 14, the TV cable modem 108 and the transceiver 601 communicate with each other via the bus 74.

In paragraphs 19 and 20 of the Office Action, the Examiner asserts, referring to the signal buffers 80/81 in Fig. 3a of Baran, that Baran shows (i) "assigning a first time slot to the cable modem in which the cable modem can transmit data upstream," and (ii) "reserving a second time slot, unassigned to a particular cable modem" as recited in claim 1. It is not understood how the components of Baran to which the Examiner referred remotely suggest the above-identified features (i) and (ii). The description regarding the buffers 80/81 in Baran teaches nothing about the features (i) and (ii) of claim 1. Nothing in Baran suggests that the buffers 80/81 assign/reserve a time slot to a cable modem. Rather, the buffers 80/81 simply couple the TV cable modem 108 to the bus 74, with no suggestion regarding a specific time slot to be assigned/reserved for a cable modem. Therefore, Baran fails to teach or suggest the features (i) and (ii) of the invention.

Paragraph 21 of the Office Action states that Baran shows (iii) "informing an FFT generator of the first time slot and of the second time slot" recited in claim 1, by referring to the microcontroller 73 which controls the buffers 80/81 via the bus 74 in Fig. 3a. Baran does not teach or suggest this feature since there is no FFT generator shown in figures of Baran including Fig. 3a. Furthermore, since Baran fails to show the first and second time slots in the features (i) and (ii), Baran cannot be said to teach or suggest informing an FFT generator of these specific time slots.

In paragraph 22, the Examiner alleges that the last full paragraph of column 12 of Baran shows (iv) "generating one or more FFT measurements of an upstream spectrum during the first time slot and the second time slot" as recited in claim 1. The cited portion of Baran mentions that signals can be processed with fast Fourier transforms for interfacing with multiple terminals at different frequencies. But it has nothing to do with generating FFT measurements of an upstream spectrum at two different pre-assigned time slots. In other words, the cited portion of Baran merely suggests signal processing by FFT in a general context of signal transmission formats. Again, this part of the reference in no way teaches or suggests generating an FFT measurement during the first and second time slots as claimed.

For at least the reasons set forth above, Baran fails to teach or suggest the claimed features (i)-(iv) in any way. Similar arguments apply to claims 15, 21, 27, 31, and 32. Applicants respectfully request detailed clarification by the Examiner regarding why Baran can be said to show the claimed features as stated in paragraphs 19-22 of the Office Action.

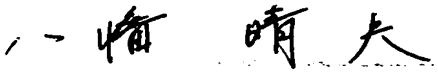
Overbury does not cure the deficiencies of Baran since Overbury simply does not show any time slots assigned/unassigned to a cable modem. Rather, Overbury relates to interference cancellation on a time-continuous basis.

Accordingly, the Office Action does not set forth a prima facie case of obviousness for at least claims 1, 15, 21, 27, 31, and 32. Claims 2-14, 16-20, 22-26, and 28-30 dependent, either directly or indirectly, from one of claims 1, 15, 21, 27, 31, and 32 are also believed to be allowable for at least the same reasons set forth above in connection with the independent claims. Accordingly, withdrawal of the rejections to claims 1-32 is respectfully requested.

V. CONCLUSION

Applicants believe that all pending claims are in condition for allowance, and respectfully requests a Notice of Allowance at an early date. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 510-843-6200.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP



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Limited Recognition under 37 CFR §10.9(b)

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APPENDIX -- VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 3, 13, and 15 have been amended as follows:

3. (Amended) A method as recited in claim 1 wherein a [MAC] Media Access Control unit assigns the first time slot and reserves the second time slot.

13. (Amended) A method as recited in claim 12 further comprising informing a [MAC] Media Access Control unit to not assign a time slot to the cable modem if any of the power differences are greater than the predetermined threshold power ratio.

15. (Amended) A cable modem termination system (CMTS), the CMTS capable of detecting faulty cable modems, the CMTS comprising:

an upstream receiver and demodulator capable of receiving an upstream signal;

a Fast Fourier Transform (FFT) engine capable of performing FFT measurements on the upstream signal and storing the FFT measurements; and

a processor for performing computations on the FFT measurements and communicating data, wherein the data relates to noise levels of the upstream signal at predetermined times, wherein the predetermined times correspond to

a time when a cable modem is transmitting data upstream, and

a time when no data is being transmitted upstream.

In the Abstract:

The abstract of the disclosure beginning at page 37 has been amended as follows:

[Methods, apparatus, and computer program products are disclosed for determining the upstream signal transmission quality of a cable modem. Faulty cable modems, often having degrading RF transmitters, can cause undesirable noise in the entire upstream spectrum of a cable plant. The most damaging manifestation of this undesirable noise is in the form of a noise spur; a sudden rise in an otherwise unharmful noise floor.] A media access control (MAC) unit in a CMTS assigns a normal time slot to a cable modem being tested for its upstream transmission quality. [It is during this normal time slot that the cable modem can transmit data upstream.] An FFT generator or engine operating in conjunction with the CMTS is informed of

this normal time slot. A dummy time slot, not assigned to any cable modem, is created and the FFT generator is informed of the dummy time slot. [The FFT generator, as well as the upstream receiver in the CMTS, is certain that no data will be transmitted during this dummy time slot.] A number of FFT measurements of the upstream channel are generated during the normal time slot and during the dummy time slot. FFT measurements of the upstream spectrum taken during the normal time slot are compared to FFT measurements taken during the dummy time slot. Through this comparison, undesirable noise spurs, if any, can be detected in the upstream spectrum caused by the cable modem being tested.

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Expires: December 4, 2002

Harry I. Moatz
Director of Enrollment and Discipline